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Additions to the flora of Colorado

Geo. E. Osterhout

1. **Nuttallia hastata** sp. nov.

Biennial, 4–8 dm. high, scabrous throughout as other like species of the genus, branched from the upper half, or even lower, the branches strict and somewhat fastigiate, flowers from the ends of the stem and branches, somewhat cymous; lower leaves narrowly linear, 5–10 cm. long, sinuate and bluntly dentate, tapering to a petiole, upper leaves linear-hastate, attached by a broad base, deeply dentate with sharp teeth, acuminate; flowers white, petals eight to ten, about 2 cm. long, the alternate ones smaller and more pointed, but seldom anther-bearing; capsules variable in length, the longer ones about 3 cm. long, four- to five-angled, usually a pair of bracts at the base; seeds under a good lens thickly and evenly papillose, wing-margined.

I have collected *Nuttallia hastata* at different times in several localities in Colorado, North Park, Middle Park, and Glenwood Springs, and not far from Jelm Post Office, Wyoming, by the roadside, on the east side of the Laramie River. The specimens which I have selected for the type were collected near Walden, North Park, Colorado, August 6, 1918, No. 5796. It does not closely resemble *N. nuda* (Pursh) Greene or *N. stricta* (Osterhout) Greene, but is what I suppose has been classified as *N. Rusbyi* (Wooton) Rydb. among the Colorado species. The flowers, however, are white, not yellow; and the capsule is angled, not cylindrical. Professor Wooton, in the original description of *N. Rusbyi*, observed, "stigma three-parted," but this is characteristic of a number of species, perhaps of the genus.

There is a peculiarity in the species of *Nuttallia* in that the flowers do not hold their color in the dried state. In the "Flora of the Rocky Mountains and adjacent plains," Dr. Rydberg says of the white flowered species, "petals straw-colored," and this is their appaerance by the time they usually reach the herbarium, but at the time of opening they are white, as far as I am acquainted with them, pure white.

2. **Phacelia formosula** sp. nov.

Biennial, 1.5–2 dm. high, stem single and upright, the flowering branches from near the top, or more commonly branched from near the base, the assurgent branches almost equaling the main stem, densely pubescent and somewhat hispid, becoming more glandular and hispid above; leaves lanceolate, or some of them oblanceolate, in outline. 5–7 cm. long pinnate with leaflets 5–10 mm. long, 3–5 mm. wide, entire or toothed, a terminal portion lobed or pinnatifid, not much enlarged, hispid with rather short hairs, the upper more glandular; inflorescence of several branches of two-ranked scorpoid racemes becoming 3–5 cm. long, corolla blue, its lobes rounded and entire, the filaments and style long-exserted; mature capsule the length of the calyx lobes, or very nearly so, 4 mm. long, four-seeded, the seeds 2.5 mm. long, rounded on the back, foveolate, the hollowed ventral side with a salient ridge lengthwise through the middle, the edges rounded.

I am indebted to Mr. J. Francis Macbride of the Gray Herbarium for the information that Mr. C. F. Baker's No. 758, collected at Ouray, Colorado, in 1901, is the original specimen from which *Phacelia Bakeri* (Brand) F. Macbr. was described. It is possible that *P. formosula* may be considered as closely related to *P. Bakeri*, which Dr. Rydberg has made a synonym of *P. glandulosa* Nutt., or may be it might be considered the same species. But *P. formosula* is a rather smaller plant, the leaves are smaller, the hispid pubescense is not so coarse, the calyx lobes are narrower, and the capsule is smaller and shorter pediceled. The difference is also notable in the character of the seeds. Dr. Gray, in the Synoptical Flora of North America, observed of the group in which *P. glandulosa* is placed, "seeds oblong or elliptical, flatter and thinner" than those of the group in which *P. crenulata* Torr. is placed, and it might be added that their edges are surrounded by a thin flat margin. *P. formosula* has "seeds with excavated ventral face divided by a salient ridge," and rounded edges, like those of *P. crenulata* or *P. corrugata* A. Nels., except that they are not corrugated on the edges. The seeds are like those of *P. splendens* Eastw., only smaller.

The only locality from which I have *P. formosula* is North Park, Colorado; and the type specimens were collected near Walden, along the road descending to the Michigan Creek, August 6, 1918, No. 5794.

3. **Oreocarya monosperma** sp. nov.

Biennial or short-lived perennial, stem single or several from the crown of the root, 2–3 dm. high, hispid with coarse spreading hairs and a finer pubescence beneath, branching from about the middle into a thyrsoid-paniculate infloresense; lower leaves oblanceolate, obtuse, with the petiole 3–8 cm. long, about a cm. wide, becoming smaller upward, sessile, very hispid on both sides, the coarse hairs pustulate at base, a fine indument beneath; caylx lobes narrowly linear, in fruit becoming 8–9 mm. long, hispid and pubescent as the stem; corolla white, the tube the length of the calyx lobes, 4 mm. long, the anthers attached at the throat, filaments almost none; nutlets, only one maturing, ovate, margined, the margin upturned, slightly more than 3 mm. long, lightly cross-ridged, and tuberculate between the ridges.

Oreocarya monosperma in appearance is much like *O. thyrsiflora* Greene; the two plants are about the same size, but the thyrsus is not so long in comparison with the stem; the nutlets are darker in color, ridged more, and less tuberculate, one instead of four. Collected at Trinidad, Las Animas County, Colorado, July 20, 1918, No. 5754.

4. **Mertensia Clokeyi** sp. nov.

Stem slender, 2.5–3 dm. or occasionally 4 dm. high, glabrous or thinly appressed pubescent, branching from the upper third into a loose paniculate infloresense, the peduncles often long and the flowers clustered at their ends; leaves rather remote on the stem, the lower narrowly linear, 3–4 cm. long, 3–4 mm. wide, the upper lanceolate, or narrowly ovate-lanceolate, acuminate, all sessile by a broad base, pubescent on both sides, the upper thinly with appressed, sharp pointed hairs, the lower less appressed; pedicels strigose pubescent, calyx 3.5 mm. long, the lobes 2.5 mm., lanceolate, glabrous, the edges ciliate; corolla 10–11 mm. long the tube half the length; filaments long, about the width of the anthers.

Mertensia Clokeyi was collected by Mr. Ira W. Clokey, of Denver, at Lake Eldora, Boulder County, Colorado, in woods, altitude 9,300 ft., No. 3161. It belongs to the *M. lanceolata* group. The leaves are pubescent on both sides, the pedicels strigose, and the calyx glabrous, except the ciliate edges of the lobes; in these respects it is like *Mertensia media* Osterhout, but the leaves are much broader and different in shape.

5. **Agoseris frondifera** sp. nov.

An acaulescent perennial, the scape occasionally bearing a leaf, and usually two large leafy bracts at the base of the involucre, 1–2 dm. high, glabrous except for the tomentum at the base of the involucre and some slight tomentum on the stem, mainly at the base; leaves narrowly oblanceolate, from 1 dm. to almost 2 dm. long, glabrous but not glaucous, entire or with several narrow lobes 1–2 cm. long; involucral bracts 2 cm. high, in three series, the inner narrow and scarious-margined, the outer broad, abruptly acuminate, longer and covering the inner, with a long tomentose pubescence especially on the margins; rays yellow; achenes striate for 8 mm., the beak 6 mm. long, the pappus white, 10 mm. long.

Agoseris frondifera is related to *A. montana* Osterhout; the bracts are like that species, and occasionally *A. montana* bears a leaf on the scape. It is in every way a smaller plant than *A. montana*, and the leaves are narrower. It was collected by Mr. Ira W. Clokey of Denver, as his label reads, at Camp Pitts, Boulder County, Colorado, in woods, altitude 9,600 ft., August 16, 1918, No. 3114.

6. ONOPORDUM TAURICUM Willd.

On July 22, 1918, I stopped for a few minutes at the Greenhorn Post Office in Pueblo County, Colorado, and across the road from the post office, growing in abundance along a little ravine was what I took to be some European *Cirsium*. The heads of purple flowers made an attractive showing. Mr. J. Francis Macbride of the Gray Herbarium identified it as *O. tauricum* Willd.